

ABSTRACT OF THE DISCLOSURE

A heating element for a fuel cell system comprising a body constructed of a thermally conductive material. The interior of the body has a plurality of fluid flow channels formed therein. A hydrogen absorption material capable of absorbing hydrogen in an exothermic reaction to form a metal hydride in a reversible reaction is disposed within the channels. A conduit provides fluid communication to and from the channels and the exterior of the body which is in the form of a storage vessel. Hydrogen is supplied via the conduit to the flow channels and is absorbed by the hydrogen absorption material which generates heat that is transferred through the thermally conductive material to regions surrounding the storage vessel. Methods of heating a fuel cell with a device storing material capable of an exothermic reaction that generates heat are also provided.